WHAT IS CLAIMED IS:

1. An information processing method of dividing a feature space in which a point set given as learning patterns is present to form a classification tree on the basis of the learning patterns, comprising:

the linear combination feature amount generation step of generating a new feature amount by a linear combination of the feature amounts of the learning patterns;

the hierarchization pre-preprocessing step of hierarchizing, in advance, the new feature amount generated in the linear combination feature amount generation step; and

the classification tree generation step of generating a classification tree on the basis of the learning patterns hierarchized in the hierarchization pre-processing step.

2. The method according to claim 1, wherein in the linear combination feature amount generation step, a coefficient of the linear combination is selected from a fixed set of coefficients.

3. The method according to claim 1, wherein in the hierarchization pre-processing step, the feature amount is hierarchized on the basis of a normal vector of the hyperplane formed by the linear combination in the linear combination feature amount generation step and a hyperplane having the normal vector.

4. The method according to claim 3, wherein the hyperplane used in the hierarchization pre-processing step includes a hyperplane perpendicular to the feature amount axis.

5. The method according to claim 1, wherein

in the hierarchization pre-processing step, a hierarchical structure is formed such that the structure is hierarchized for each feature amount, and

in the classification tree formation step, a classification efficiency is calculated from a hierarchical structure of each feature amount at each node, a feature amount used on the basis of the classification efficiency is determined, and a classification tree is formed.

6. The method according to claim 1, further comprising the recognition step of recognizing a newly input pattern using the classification tree formed in the classification tree formation step.

7. The method according to claim 1, wherein in the hierarchization pre-processing step, the feature amount is hierarchized on the basis of a range of values which can be taken by the learning patterns.

8. The method according to claim 1, wherein in the hierarchization pre-processing step, the feature amount is hierarchized on the basis of a profile of the learning patterns.

9. The method according to claim 1, wherein the

learning pattern is any one of an image pattern, a speech pattern, and a character pattern.

10. An information processing apparatus for dividing a feature space in which a point set given as learning patterns is present to form a classification tree on the basis of the learning patterns, comprising:

linear combination feature amount generation means for generating a new feature amount by a linear combination of the feature amounts of the learning patterns;

hierarchization pre-preprocessing means for hierarchizing, in advance, the new feature amount generated by said linear combination feature amount generation means; and

classification tree generation means for generating a classification tree on the basis of the learning patterns hierarchized by said hierarchization pre-processing means.

11. A program for dividing a feature space in which a point set given as learning patterns is present to form a classification tree on the basis of the learning patterns, the program causing a computer to function as:

linear combination feature amount generation means for generating a new feature amount by a linear combination of the feature amounts of the learning patterns;

hierarchization pre-preprocessing means for hierarchizing, in advance, the new feature amount generated by the linear combination feature amount generation means; and

classification tree generation means for generating a classification tree on the basis of the learning patterns hierarchized by the hierarchization pre-processing means.